



CHILDREN AND INTERNET: EMPOWERING LEARNERS WITH CYBER SECURITY EDUCATION

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Paper Received On: 21 December 2024

Peer Reviewed On: 25 January 2025

Published On: 01 February 2025

Abstract

Internet and technology have become an integral part of everyone's life. The penetration of the Internet and net-based technology into education has greatly benefited students in terms of access to information. However, excessive dependence and use of internet technologies pose a potential threat to users; making them, especially students, susceptible to cyber threats and crimes such as hacking, phishing, cyberbullying, etc. Although students extensively use the internet for learning, gaming, and other online activities, their awareness about the threats looming in the cyber world remains limited, and their preparedness to handle potential threats is relatively low. This paper highlights the importance to make students empower with cyber security education, so that they could live safely in the cyber world. This paper also emphasises the need for introducing cyber security education in every schools as a mandatory curricular subject at an appropriate age so as to make them aware about the threats hiding in the cyber world well before they start exploring cyber space themselves.

Keywords: cyber security education, cyber awareness, cyber threats, online safety

Introduction:

Technology has become an integral part of education, communication and daily life (Rahman, Sairi, Zizi, & Khalid, 2020). Despite being active users, people lack awareness of online risks and measures that need to be considered to protect themselves from cyber threats (Kam & Katerattanakul, 2019). The cyber attackers take advantage of the loophole as users engage with digital platforms without having proper awareness of cybersecurity. This underscores the

importance of basic knowledge about cybersecurity, emphasizing the need to introduce cybersecurity education at an early age. Since students actively engage with the internet mainly for learning, communication, gaming, and entertainment, it is necessary to equip them with cybersecurity awareness as an essential requirement for their safety in the cyber world.

Cybersecurity education provides students with valuable advantages (Chachak, 2024). It empowers them with the skills and knowledge needed to recognize and counter cyber threats, ensuring they can navigate the digital landscape securely. Moreover, it fosters critical thinking and problem-solving abilities by encouraging students to assess risks and make well-informed choices. Furthermore, learning about the impact of their online behaviour helps students cultivate ethical responsibility and become responsible digital users. here, schools can play a significant role in providing cybersecurity education to ensure students gain the essential knowledge and skills needed to stay safe online (Yashwant, 2021). It has become crucial for students to stay safe in online spaces, as there is a growing risk of online threats in different forms. without adequate cyber security education, students remain ignorant and confused and might unintentionally adopt unsafe online habits, making them vulnerable to cyber threats. the current learners use the internet to meet their learning needs, and hence, the school is the best place to import the basics of cyber security education to the learners. if it is provided well before they start exploring the internet of their own, it would be much more desirable. therefore, introducing cybersecurity education at the school level has become an inevitable requirement. The present study conducted an in-depth literature review. The researchers utilised a range of sources, such as books, journals, articles, research papers, periodicals, and other relevant websites, to understand the concerns and opportunities related to cyber security education at the school level, especially from an Indian perspective.

Need for cyber security education:

The advancement of technology and the internet has created two distinct realms: the physical and the digital (Lokman, Nasri, & Khalid, 2019). In the digital world, access to information is at one's fingertips using search engines like Google and Yahoo and video-sharing platforms like YouTube. Students benefit the most from it, yet they are introduced to cyberspace without any fundamental training. They are merely taught how to access it but not how to navigate its challenges. Most students have never participated in cyber security education or training for which they have little knowledge or awareness of online risks (Shillair, et al., 2022). They are only exposed to the positive aspects of the internet and how to access it while lacking education,

awareness, and training. This gap has become a major contributor to cybersecurity issues. In such a scenario, cybersecurity education has become essential.

Cybersecurity has become a vital necessity in an increasingly digital and interconnected world. The need to safeguard data, infrastructure, and digital systems has increased with the advancement of new technologies and Internet use. Cybersecurity involves the protection of these resources from unauthorized access, attacks, and data breaches. Cyber security is also known as informant technology security. It mainly practices to safeguard critical systems and sensitive data from digital threats (Yashwant, 2021). It also involves detecting and preventing measures to defend networked systems and applications from potential attacks, whether they come from internal or external sources. In simple words, it is nothing but a range of practices to protect internet-connected devices from unauthorized access, theft, and harm (Sparsh Global School, N/A). It not only focuses on skill but also updates users about the ongoing threats and makes them aware of the potential threats they might encounter while using any online platforms, be it social media, chat platforms, gaming, email, etc. (Sareen & Jasaiwal, 2021). In such a scenario, schools play a significant role in fostering detailed cyber security awareness among users at a tender age.

With the advancement of the internet and technology, it has become integrated into education, exposing children to its use without any proper training, for which they are an easy target. Cyber threats have significantly risen, such as cyberbullying, online fraud, racial abuse, pornography, and gambling due to a lack of awareness and self-protection strategies among students (Rahman, Sairi, Zizi, & Khalid, 2020). The awareness levels among students remain low to moderate. Therefore, they should receive cybersecurity education and be made aware of the importance of safeguarding their online identity and privacy (Sparsh Global School, N/A). Teaching children about cybersecurity equips them with the skills to use technology responsibly and recognize potential cyber threats.

The need for cyber security education has increased with the evolution of the internet and technology. Students are benefited from easy access to information, but their lack of awareness or training in navigating online risks leaves them vulnerable to cyber threats. The increasing reliance on digital platforms has heightened the importance of safeguarding sensitive data and online identities through cyber security education. Cybersecurity education not only focuses on technical skills but also involves raising awareness of potential risks and fostering responsible digital behaviour. Schools play a major role in giving online safety to students at

an early age, given the rise of cyber threats. By integrating cybersecurity education into curricula, students can be better equipped to protect themselves and contribute to a safer digital environment.

Cyber security education at school:

The importance of cybersecurity education at school cannot be overlooked, given the ever-evolving advancements in Information and Communication Technology (ICT) and our increasing reliance on the Internet. Education, like many other fields, has been integrated with and significantly impacted by technology. In such a scenario, staying away from it out of fear of cyber threats will only lead to lost opportunities. The adoption of the Internet and technology in education became particularly evident after the COVID-19 pandemic, which caused a rapid increase in remote and online learning (Yashwant, 2021). This has shifted the classroom scenario from traditional to innovative online solutions, but at the same time, it exposes students to cyberspace, making them easy targets for cyberattacks. However, limited funding and a shortage of skilled personnel have resulted in basic system misconfigurations and unresolved security vulnerabilities. With the widespread shift to digital learning, these shortcomings have become even more problematic, highlighting the urgent need for schools to enhance their cybersecurity knowledge and upgrade their technological infrastructure for long-term virtual learning.

An increasing number of students are engaging with the internet daily, for which the importance of cyber safety and security becomes increasingly evident (Rathnabai, 2024). While digital connectivity enhances education by providing access to a wealth of information and interactive learning tools, it also exposes students to online risks like phishing, cyberbullying, and data breaches. To mitigate these threats, cyber security education must be prioritized. Introducing cyber security education at the school level ensures digital well-being, which means teaching them to use privacy settings effectively, protect their personal information, and engage responsibly online. This will encourage students to engage in respectful online behaviour and also to prevent themselves from cyber threats as it will develop their critical thinking skills.

Cyber security education at a tender age:

Students are engaged with the internet because it serves as a gateway to enhanced digital connectivity in education, providing them with benefits such as access to information from anywhere in the world and learn with the help of innovative online learning tools (Rathnabai, 2024). Its impact is evident in India's educational landscape, where significant growth in the

country's digital infrastructure is reshaping various aspects of daily life and education. The widespread availability of digital tools and resources is also transforming how education is accessed and delivered. Affordable smartphones and data plans fuel this surge in internet use. India's rapid digital transformation is like a double-edged sword, bringing advantages and challenges. While technological advancements benefit students by enhancing learning opportunities, they also pose growing cybersecurity attacks, as young learners are increasingly exposed to the digital world at a vulnerable age. These attacks are very complex, varied, widespread and impactful among users (Nehra & Deepanshi, 2023). It exposes students to online threats like phishing, cyberbullying, data breaches etc. Cyber attackers targeting adolescents and children have become common and a rising concern for parents (Rademaker, 2016). Most parents are not aware of what their children are going through even after staying under the same roof. Children tend to hide their online activities out of fear, making it harder to identify potential cyber threats. Children's internet use has exposed them to harmful experiences such as discrimination, intimidation, harassment, and sexual exploitation. Moreover, children have become highly skilled at using technologies today, which has made it challenging for parents to monitor and protect their kids from cyber-attacks (Negi & Sunita, 2019). Children navigate the internet on their own, believing it is a space that solely benefits them. However, without supervision, they become more vulnerable to online threats (Sareen & Jasaiwal, 2021).

In this digital landscape, where there are both pros and cons, knowledge has become a powerful tool, and awareness serves as the first line to defend oneself (Nehra & Deepanshi, 2023). Cybersecurity awareness and education programs have become crucial and to mitigate these risks, prioritizing cyber safety education (Rathnabai, 2024). Integrating cybersecurity education into students' learning not only equips them with the skills to effectively use privacy settings, protect personal data, and navigate online spaces responsibly but also safeguards their digital well-being and fosters responsible digital ethics. Educators must actively spread awareness about cybersecurity to encourage responsible online behaviour.

Benefits of cyber security education

Students who get introduced to cyber security education develop critical thinking which helps them to distinguish between credible and misleading information (Rathnabai, 2024). It has become crucial to make students aware of potential threats at schools (Trappe & Straub, 2021). Cybersecurity education at the school level can begin with fundamental concepts like creating

strong passwords, recognizing and avoiding suspicious emails or links, and protecting personal information. It will encourage them to stay protected and empower them to use digital technologies efficiently, ultimately enhancing their academic success and growth in a connected society. In this regard, educators are responsible for raising awareness of cybersecurity threats and promoting responsible internet use, which can help reduce the occurrence of cyberattacks. Schools can also organize workshops, seminars, and conferences for parents and guardians to raise awareness and help them protect both themselves and their children. This will help parents to learn about online safety measures, including the use of parental control software to monitor digital activities, and tips and tricks to prevent and detect cyber threats. Parents can play an active role in safeguarding their children. This collaborative effort will strengthen the school's ability to combat cyber threats targeting children.

Imparting cyber security education

Imparting cybersecurity education is essential in today's digital era, where individuals, especially students, are constantly exposed to online risks. It involves teaching fundamental concepts such as online privacy, data protection, safe browsing habits, and recognizing cyber threats like phishing, malware, and identity theft. Schools play a pivotal role in integrating cybersecurity awareness into the curriculum, ensuring that students develop responsible digital habits from an early age. Interactive methods such as simulations, case studies, and hands-on training can enhance learning and engagement (Sareen & Jasaiwal, 2021). By equipping students with cybersecurity knowledge, they can navigate the digital world confidently and securely, minimizing their vulnerability to cyber threats while fostering a culture of responsible internet usage. Cybersecurity should also be taught alongside the fundamental "3 Rs" from an early age (Venter, Blignaut, Renaud, & Venter, 2019). Introducing awareness and knowledge at the primary school level and integrating it throughout the curriculum would help ensure that individuals develop the necessary skills when they need them

Conclusion

In conclusion, the integration of technology into education and daily life has made cybersecurity education a necessity rather than a choice. While students actively engage with digital platforms, their lack of awareness about online risks leaves them vulnerable to cyber threats. Cybersecurity education equips them with the knowledge and skills to recognize and counter such threats and fosters critical thinking, ethical responsibility, and safe online habits. Schools play a crucial role in imparting this education, ensuring that students develop a strong

foundation in cybersecurity before they independently explore the digital world. Given the rising cyber risks, introducing cybersecurity education at an early age is an essential step toward creating a safer and more informed digital generation.

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